

**REMARKS**

Claims 19-28 are pending in this application. By this Amendment, claims 19 and 22 are amended and claims 27 and 28 are added. Support for the amendments to the claims and the newly added claims may be found, for example, in the specification at paragraphs [0049] and [0050]. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance of the application are respectfully requested.

**I. Support for the Amendments and New Claims**

By this Amendment, claims 19 and 22 are amended to recite a pH of "3 to 6 or 9 to 13," and new claims 27 and 28 recite, "a pH of 3 to 5 or 11 to 13." The amendments and new claims are supported by the specification as originally filed, and do not introduce new matter into the specification.

The specification as originally filed clearly supports the feature that the pH of the abrasive is from 1 to 6 or 8 to 13. See, for example, specification, paragraphs [0049] and [0050]. Further, the specification clearly discloses that the pH of the abrasive can be adjusted by adding an acidic substance or a basic substance to achieve the specified pH ranges. *Id.* In fact, the specification discloses a broader pH range than is now claimed. As in In re Johnson & Farnham, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (C.C.P.A. 1977), Applicants are merely excising (what the Examiner asserts is) the invention of another, to which they may not be entitled, and thus, Applicants are not claiming "new matter." See also In re Blaser, Germscheid, & Worms, 556 F.2d 534, 538, 194 USPQ 122, 125 (C.C.P.A. 1977), in which a disclosure of a temperature range of 60-200°C was considered sufficient support for a claim recitation of 80-200°C. See also In re Risse, Horlein, & Wirth, 378 F.2d 948, 952-53, 154 USPQ 1, 5 (C.C.P.A. 1967).

As mentioned above, the present specification clearly supports the presently claimed pH of 3 to 6 or 9 to 13, and 3 to 5 or 11 to 13, within the disclosed range of from 1 to 6 and 8 to 13. The smaller range appearing in amended claims 19 and 22 and new claims 27 and 28 are, as in In re Johnson & Farnham, *supra*, simply limited to a portion of the disclosed invention in order to avoid any potential overlap with a compound even incidentally recited in Tastu.

## II. Rejection Under 35 U.S.C. §103

The Office Action rejects claims 19-26 under 35 U.S.C. §103(a) over U.S. Patent No. 4,769,073 to Tastu et al. ("Tastu") in view of EP 0 444 470 to Ashley et al. ("Ashley") and further in view of U.S. Patent No. 6,171,572 to Aozasa ("Aozasa") and U.S. Patent No. 5,264,010 to Brancaleoni ("Brancaleoni"). Applicants respectfully traverse the rejection.

By this amendment, claim 19 recites, *inter alia*, "an abrasive for polishing a rock crystal, a quartz glass for a photomask, a semiconductor device or a hard disk made of glass, the abrasive comprising a sol ... the abrasive has a pH of 3 to 6 or 9 to 13." Claim 22 recites similar subject matter. Applicants respectfully assert that the applied references would not have rendered obvious at least the above features of claims 19 and 22.

Tastu merely discloses that a product is obtained by reacting a cerium salt, a rare earth salt and a basic substance at a pH that is advantageously 7-9 to obtain a precipitate. The precipitate is then filtered. However, Tastu fails to disclose the stability at a pH that is above or below the advantageously disclosed range of 7-9 and, thus, Tastu does not disclose, and would not have rendered obvious, the stability of an abrasive at a pH from 3 to 6 or 9 to 13, as recited in claims 19 and 22. See Tastu, col. 8, lines 1-7.

In contrast, the claimed abrasive contains a cerium oxide and a lanthanum compound and/or a neodymium compound that is stable within a pH range from 3 to 6 or 9 to 13, as shown in Fig. 3 of the specification. The stability of the claimed abrasive results in a

polishing process in which no scratching or damage on the polished surface occurs, thus giving a good polished surface. Thus, Applicants respectfully assert that it would not have been obvious to one of ordinary skill in the art to have used an abrasive with the claimed pH range at least because Tastu fails to disclose that an abrasive within the claimed pH range is stable.

Further, Applicants respectfully maintain their assertion that the pH disclosed in Tastu is for an intermediary reaction mixture and not a final abrasive. As previously argued, for example, in the Amendment Filed With RCE on April 22, 2009, the pH of greater than 6 but not more than 10 disclosed in Tastu is directed to a reaction mixture for forming a cerium oxide and rare earth oxide powder, but is not directed to a final abrasive.

For example, Tastu discloses that a ceric oxide composition described in French Patent No. 2,545,830 contains ceric oxide combined with at least one oxide of another trivalent rare earth. See Tastu, col. 7, lines 6-9. Tastu discloses that the composition described in French Patent No. 2,545,830 are "prepared by simultaneously and continuously mixing together a solution of the cerium salt, a basic solution, and a solution of at least one salt of a trivalent rare earth selected from the lanthanides and yttrium ... (with the number of basic equivalents being greater than or equal to the number of cerium and rare earth equivalents and the pH of the reaction medium being greater than 6), and then by filtering the resultant precipitate, and drying and calcining the same." Tastu, col. 7, lines 28-39 (emphasis added). There is no cerium oxide—which is an explicitly claimed component of the claimed abrasive—disclosed in this mixture. Rather, Tastu discloses a mixture of cerium salt, a basic solution, and at least one salt of a trivalent earth that is used as a reaction medium with a pH of greater than 6, but not more than 10, to form ceric oxide and rare earth oxides that are later added to an aqueous solution to create a "suspension."

As can be seen in col. 8, Tastu discloses that "[t]he pH of the reaction medium should then be greater than 6, but must not exceed 10." Tastu, col. 8, lines 3-5 (emphasis added). Further down in column 8, Tastu discloses that "[t]he retention time of the mixture in the reaction medium is also not critical and may vary over wide limits. Generally, a retention time from 30 min to 2 hr is appropriate." Tastu, col. 8, lines 26-29. Thus, the "reaction medium" of Tastu is not intended to be a final product and, therefore, the pH of the reaction medium, which is merely used to form cerium salt and rare earth salts into ceric oxide and rare earth oxides, has no bearing on the pH of the final solution. In addition, Tastu discloses that the second stage of the process for producing the composition described in French Patent No. 2,545,830 (i.e., producing ceric oxide and rare earth oxides) includes "filtering the reaction mass [reaction medium] (which is in the form of a suspension) upon completion of the reaction." Tastu, col. 8, lines 39-42. Tastu then discloses that the filter cake may be washed with water, dried, and calcined. See Tastu, col. 8, lines 43-47. Thus, Applicants respectfully assert that the pH of the reaction medium is maintained in a range greater than 6, but not more than 10, in order to achieve the conversion of cerium salts and rare earth salts into cerium oxide and rare earth oxides, and that Tastu and the Office Action fail to provide any reason or rationale for one of ordinary skill in the art to have used the claimed pH in a final abrasive.

As further support of Applicants' above assertion, Example 2 of Tastu discloses that a ceric oxide suspension is produced from a ceric oxide composition prepared according to French Patent No. 2,545,830 marketed by Rhone-Poulenc Co. under the trademark Cerrox G.G. Tastu, col. 12, lines 40-45. In Example 2, Tastu discloses that "one liter of an aqueous suspension of ceric oxide was prepared, having the following composition: (i) 400 g Cerrox G.G.; (ii) 12 g cerous nitrate ( $\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$ ); (iii) 940  $\text{cm}^3$  deionized water." Tastu, col. 12, lines 53-57. Thus, Tastu discloses that a final "suspension" is produced by mixing

Cerox G.G., cerous nitrate and water. The composition of this final "suspension" differs from the components in the "reaction medium" that has a disclosed pH of more than 6, but not more than 10. Tastu does not disclose a pH for the final "suspension" or provide any reason or rationale for one of ordinary skill in the art to have modified the "suspension" of Tastu to have the claimed pH.

Further, The Office Action fails to provide any reason or rationale for one of ordinary skill in the art to have stopped the reaction of the "reaction medium" in Tastu and to have used this intermediary "reaction medium" as an abrasive. Thus, Tastu merely discloses that the reaction medium is an intermediary solution comprising cerium salt and rare earth along with a basic solution to form an oxide, but does not disclose that this "reaction medium" can or should be used as an abrasive for polishing. If the applied references merely disclose compounds as intermediates in the production of a final product, as is the case of the "reaction medium" in Tastu, it would not have been obvious to one of ordinary skill in the art to use these compounds. See MPEP §2144.09(VI). Thus, Applicants respectfully assert that the "reaction medium" of Tastu that is disclosed to have a pH of more than 6, but not more than 10, would not have rendered obvious the claimed abrasive.

Furthermore, Ashley, Aozasa and Brancaleoni are not applied by the Office Action to address the above discrepancies of Tastu. Namely, the Office Action does not apply Ashley, Aozasa or Brancaleoni as disclosing a pH range of an abrasive. Thus, Tastu, Ashley, Aozasa and Brancaleoni, as applied in the Office Action, would not have rendered obvious each and every feature of claims 19 and 22.

For at least the reasons stated above, claims 19 and 22 would not have been rendered obvious by Tastu, Ashley, Aozasa and Brancaleoni, as applied in the Office Action. The remaining claims variously depend from claims 19 and 22 and likewise would not have been

rendered obvious. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**III. New Claims**

By this Amendment, new claims 27 and 28 are presented. New claims 27 and 28 depend from claims 19 and 22 and, thus, distinguish over the applied references for at least the reasons discussed above with respect to claims 19 and 22, as well as for the additional features that they recite. Namely, Applicants respectfully assert that the applied references fail to disclose, and would not have rendered obvious, an abrasive with a pH of 3 to 5 or 11 to 13, as recited in claims 27 and 28. Prompt examination and allowance of new claims 27-28 are respectfully requested.

**IV. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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